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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,331	05/24/2002	Jason Jiang	A-71259/DJB/MAK	5783

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EXAMINER

NGUYEN, CINDY

ART UNIT	PAPER NUMBER
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2161

DATE MAILED: 03/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,331

Applicant(s)

JIANG ET AL.

Examiner

Cindy Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02/26/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This is in response to application filed on 05/24/2002 in which claims 1-54 are presented for examination.

(1) *Priority(IDS)*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

2. *Information Disclosure Statement*

The information disclosure statement filed on 02/26/2002 is in compliance with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. Because it has been placed in the application file, and the information referred to therein has been considered as to the merits.

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. Applicant is requested to submit the listing of references in the specification for consideration, for example, on pages 15, 21 and 22, these references must be submit in a separate paper.

3. *Specification*

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

There are no header of Background of the Invention.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) Brief summary of the invention.

- (g) Brief description of the several views of the drawings.
- (h) Detailed description of the invention. Correction is required.

4. Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 17, 25, 43 and 51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 17 and 43 contains subject matter "structure which are connected to nodes for which the product has exceeded a predetermined threshold" which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 25 and 51 contains subject matter "term weight pairs" which was not described in the specification in such a way as to reasonably convey to one skilled in

the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

5. Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-11, 13, 14, 27-37, 39 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schultz (US 5737734) in view of Sommer et al. (US 6847966).

Regarding claims 1 and 27, Schultz discloses: a search system, including: query means for processing a query to assign respective weights to terms of said query (col. 23, lines 21-45, Schultz). However, Schultz didn't disclose: generate a query vector¹ including said weights, index means responsive to said query vector to output at least one index to data in response to said query. On the other hand, Sommer discloses: generate a query vector including said weights (col. 3, lines 40-49, Sommer), index means responsive to said query vector to output at least one index to data in response to said query (col. 3, lines 50-55, Sommer). Thus, at the time invention was made, it would have been obvious to a person of ordinary skill in the art to include generate a query vector including said weights, output at least one index to data in response to said query in the system of Schultz as taught by Sommer. The motivation being to

¹ Query vector as part of speech of the natural language query terms in the form of complete sentences.

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compute the query vector for each document in the collection by finding the product of the reduced term vector matrix and index for all the documents .

Regarding claims 2 and 28, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer discloses: wherein the weights are assigned based on the importance of the terms² in said query (col. 23, lines 21-45 and col. 24, lines 29-55, Schultz).

Regarding claims 3 and 29, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer discloses: wherein said weights are assigned to said query based on the grammatical structure of the query and the meaning the terms of the query (col. 24, lines 29-55, Schultz).

Regarding claims 5 and 31, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer discloses: wherein said query means generates sections of terms which form said query, said section (noun, verb) representing grammatical elements (the form of complete sentence)(col. 24, lines 29-55, Schultz).

Regarding claims 6 and 32, all the limitation of these claims have been noted in the rejection of claims 5 and 31 above, respectively. In addition, Schultz/Sommer discloses: wherein the terms in said sections are allocated to grammatical categories³ for determining said weights (col. 24, lines 29-55, Schultz).

² The weights are assigned based on the importance of the terms as slow word or proper noun or part of the sentence (noun, verb, objective).

³ grammatical categories as noun, verb present in the sentence.

Regarding claims 7 and 33, all the limitation of these claims have been noted in the rejection of claims 6 and 32 above, respectively. In addition, Schultz/Sommer discloses: wherein said query means generates a plurality of said sections, and parses said sections to select a set of sections forming said query vector (col. 24, lines 29-55, Schultz).

Regarding claims 8 and 34, all the limitation of these claims have been noted in the rejection of claims 7 and 33 above, respectively. In addition, Schultz/Sommer discloses: wherein said sections are selected on the basis of syntactical structure (base on the sentence) (col. 24, lines 29-55, Schultz).

Regarding claims 4 and 30, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer wherein said query means analyses said terms using a dictionary and thesaurus of terms of said data. On the other hand, Hita discloses: wherein said query means analyses said terms using a dictionary and thesaurus of terms of said data (col. 17, lines 20-43, Sommer). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention is made to include teaching of Sommer because using a dictionary and thesaurus as disclosed by Sommer into Schultz's system would used to add synonyms that are not included in the pattern dictionary.

Regarding claims 9 and 35, all the limitation of these claims have been noted in the rejection of claims 4 and 30 above, respectively. In addition, Schultz/Sommer discloses:

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wherein the query vector includes respective fields for terms of said dictionary (col. 18, lines 25-40, Sommer).

Regarding claims 10 and 36, all the limitation of these claims have been noted in the rejection of claims 4 and 30 above, respectively. In addition, Schultz/Sommer discloses: wherein the weights are linguistic weights (col. 18, lines 25-40, Sommer).

Regarding claims 11 and 37, all the limitation of these claims have been noted in the rejection of claims 7 and 33 above, respectively. In addition, Schultz/Sommer disclose: wherein said sections are key centred phrase (noun phrase) structure frames with a key grammatical category (noun) (col. 23, lines 45-54, Schultz), and said query means executes frame instantiation on the terms of said query and generates a frame relation graph of said frames(col. 24, lines 29-55, Schultz).

Regarding claims 13 and 39, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer discloses: wherein said query vector has said weights placed in respective fields corresponding to terms of at least one term list (col. 18, lines 25-40, Sommer)..

Regarding claims 14 and 40, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer discloses: wherein said index means maintains a hierarchal structure of nodes representing said data and indices to said data, said nodes each include a text vector having weight for terms of said data, and leaf nodes of said structure including indices to said data (col. 18, lines 7-24, Sommer).

7. Claims 12, 15-26 and 38, 41-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schultz (US 5737734) in view of Sommer et al. (US 6847966) and further in view of de Hita et al. (US 6081774) (Hita).

Regarding claims 12 and 38, all the limitation of these claims have been noted in the rejection of claims 11 and 37 above, respectively. However, Schultz/Sommer didn't disclose: wherein query means executes parallel parsing on said frame relation graph to generate a nodal tree structure of the query to generate said query vector. On the other hand, Hita discloses: wherein query means executes parallel parsing on said frame relation graph to generate a nodal tree structure of the query to generate said query vector (col. 19, lines 1-38, Hita). Thus, at the time invention was made, it would have been obvious to a person of ordinary skill in the art to include query means executes parallel parsing on said frame relation graph to generate a nodal tree structure of the query to generate said query vector in the combination system of Schultz/Sommer as taught by Hita. The motivation being to create temporary linguistic array and linking the tokens together in the noun phrase .

Regarding claims 15 and 41, all the limitation of these claims have been noted in the rejection of claims 14 and 40 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said index means compares said query vector with the text vectors of said nodes to

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select said at least one index in response to said query (col. 38, lines 47 to col. 39, lines 10, Hita).

Regarding claims 16 and 42, all the limitation of these claims have been noted in the rejection of claims 15 and 41 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said comparing is executed from the upper level of the tree structure to the lower level, with paths in the structure being selected on the basis of the comparison between the vectors (col. 39, lines 10-35, Hita).

Regarding claims 17 and 43, all the limitation of these claims have been noted in the rejection of claims 16 and 42 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said index means obtains the product of said query vector and the text vector of the nodes of the level of said structure, and obtains said product for nodes of a succeeding level of said structure which are connected to nodes for which the product has exceeded a predetermined threshold (col. 27, lines 55 to col. 28, lines 30, Hita).

Regarding claims 18 and 44, all the limitation of these claims have been noted in the rejection of claims 17 and 43 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein the indices of nodes having a query vector node vector product higher than a predetermined threshold are output by said index means (col. 16, lines 28, lines 60 to col. 29, lines 21, Hita).

Regarding claims 19 and 45, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said index means is a self generating neural network having nodes of weight vectors

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representing categories and terms of said data, said nodes further including pointers to a first child node and a next sibling node, and leaf nodes of said network including an index to said data (col. 16, lines 28, lines 60 to col. 29, lines 21, Hita).

Regarding claims 20 and 46, all the limitation of these claims have been noted in the rejection of claims 19 and 45 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said weights are normalized, and said network is searched in response to a query by determining the inner product of said query vector and said weight vectors to locate nodes producing a high inner product (col. 25, lines 10-24, Hita).

Regarding claims 21 and 47, all the limitation of these claims have been noted in the rejection of claims 18 and 44 above, respectively. In addition, Schultz/Sommer/Hita discloses including cluster means for processing indices output by said index means in response to said query, generating term frequency vectors for data indexed by said indices, comparing similarities between the indexed data in the basis of a distance between said frequency vectors and generating content based categories on the basis of said distances and placing the output indices into said categories for display (col. 32, lines 35-47, Hita).

Regarding claims 22 and 48, all the limitation of these claims have been noted in the rejection of claims 21 and 47 above, respectively. In addition, Schultz/Sommer/Hita discloses: including feature extraction means for receiving content features of said categories from said cluster means and selecting a unique descriptive feature for each category (col. 19, lines 39-50, Hita).

Regarding claims 23 and 49, all the limitation of these claims have been noted in the rejection of claims 21 and 47 above, respectively. In addition, Schultz/Sommer/Hita discloses:

wherein said cluster means generates a plurality of clusters of the indices and determines the quality of each cluster on the basis of inter-cluster distances and intra-cluster distances between term frequency vectors for the indices of the clusters relative to a term frequency vector centroid for each cluster (col. 32, lines 35-47, Hita).

Regarding claims 24 and 50, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer/Hita discloses: including feature extraction means for accessing respective unique and important terms of said data and adding said terms to said dictionary (col. 19, lines 39-50, Hita).

Regarding claims 25 and 51, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer/Hita discloses including feature extraction means for extracting indices and respective terms of said data as term weight pairs, the weights of the pairs being based on the importance and uniqueness of component ngrams of the terms of an indexed document and the terms being extraction the basis of the distribution of ngrams in said document space and wherein said index means is a neural network generated on the basis of training examples including said term weight pairs (col. 39, lines 10-35, Hita).

Regarding claims 26 and 52, all the limitation of these claims have been noted in the rejection of claims 25 and 51 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said neural network is a self generating neural network and the format of said query vectors and vectors of nodes of said network is generated on the basis of the training examples (col. 38, lines 8-31, Hita).

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Regarding claims 53 and 54, all the limitation of these claims have been noted in the rejection of claims 1 and 27 above, respectively. In addition, Schultz/Sommer/Hita discloses: wherein said terms represent one of a word and a phrase (col. 32, lines 49-65, Hita).

8. Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy Nguyen whose telephone number is 703-305-4698. The examiner can normally be reached on M-F: 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

cn

Cindy Nguyen
February 17, 2005

Frantz Coby
FRANTZ COBY
PRIMARY EXAMINER